What is claimed is:

1. A system for producing extremely small metal spherical particles of high uniform size and high sphericty comprising:

a granulation chamber being gas substantially tight and having an upper end and a lower end;

means for collecting produced particles at the lower end of the chamber with a particle conduit means for delivering produced particles from the chamber;

conduit means for delivering molten metal through said granulation chamber upper end, said conduit means protruding through the chamber upper end so that said protruding conduit means is directed down toward the interior of the chamber;

a heated vessel being substantially gas tight and adapted for melting metal starting materials and which connects to said molten metal conduit means, allowing the flow of molten metal from the heated vessel through said molten metal conduit means;

a rotating disk located beneath said protruding molten metal conduit means which disperses molten metal that drops upon said disk from said protruding molten metal conduit means to form tiny dispersed droplets;

an atmosphere of predetermined gases in said granulation chamber and said heated vessel;

ejector means for ejecting cooling gas within a predetermined radius of said rotating disk to cool said dispersed metal droplets into solidified metal spheres.

2. The system of claim 1 which further includes controlling means for regulating gas pressure in said heated vessel.

3. The system of claim 1 which further includes controlling means for regulating gas pressure in said granulation chamber.

4. The system of claim 1 which further includes controlling means for regulating gas pressure within said dispersion space.

5. The system of claim 1 wherein the granulation chamber is cylindrical in shape.

6. The system of claim 1 wherein the upper end of said granulation chamber is open and said apparatus further includes sealing means to close the upper end of said chamber.

7. The system of claim 1 wherein said rotating disk is dish shaped.

8. The system of claim 1 wherein said rotating disk is mounted on elevation adjustment means for moving the disk up and down.

9. The system of claim 1 wherein the particle conduit means delivers produced particles from the chamber to a sizing means for filtering particles by diameter.

10. The system of claim 9 wherein the sizing filter is a screening apparatus.

11. The system of claim 1 wherein said ejection of cooling gas within a predetermined radius of said rotating disk is within a predetermined radius of the centrifugal field of the rotating disk within which the molten droplets form into spherical particles.

12. The system of claim 1 wherein said rotating disk is cone shaped.

13. The system of claim 1 wherein said rotating disk is a substantially flat disk.

14. The system of claim 1 wherein said disk is 30-50 mm in diameter.

15. The system of claim 7 wherein said dish has a depth of 10-18% of the diameter of the dish.

16. The system of claim 1 further including storing means for holding gases that comprise the gases in said heated vessel, said granulation chamber and said cooling gas.

17. The system of claim 16 further including gas flow control means for separately regulating the flow of gas from said gas storing means into said heated vessel, said granulation chamber and said cooling gas ejector means.

18. The system of claim 1 further including gas pressure control means for separately regulating the pressure of gas in said heated vessel, said granulation chamber and said cooling gas ejector means.

19. The system of claim 18 wherein said gas pressure control means are vacuum pumps.

20. A process for producing extremely small metal spherical particles of high uniform size and high sphericty comprising the following steps:

melting metal starting materials;

dispersing said molten metal starting materials into tiny spherical droplets by directing the molten metal upon a rotating disk;

cooling said dispersed metal droplets by directing a cooling-reaction gas to contact the dispersed metal spherical droplets and thus solidify the droplets into tiny spherical particles and form an anti-adhesion coating on the particles.

21. The process of claim 20 wherein said metal starting materials are selected from the group consisting of Fe, Ni, Sn, Ti, Cu and Ag.

22. The process of claim 20 wherein said metal starting materials are alloys selected from the group consisting of Ni-Al, Sn-Ag-Cu, Al-Ni-Co-Fe and R-Fe-B where R = rare earth metal.

23. The process of claim 22, wherein said rare earth metal is Nd or Pr.

24. The process of claim 20, wherein said starting materials are selected from the group consisting of Ag, Cu, Ni, Al, Ti, V, Nb, Cr, Mo, Mn, Fe, B, Ru, Co, Pd, Pt, Au, Zn, Cd, Ga, In, Ti, Ge, Sn, Pb, Sb, Bi, Ce, Pr and Nd.

25. The process of claim 20, wherein the melting of metal occurs under an atmosphere of a predetermined gas mixture of one or more inert gas and oxidizing gas.

26. The process of claim 20, wherein the dispersing of molten metal occurs under an atmosphere of a predetermined gas mixture of one or more inert gas and oxidizing gas.

27. The process of claim 20, wherein the cooling of dispersed molten droplets is composed of a predetermined cooling-reaction gas mixture of one or more inert gas and oxidizing gas.

28. The process of claim 20 wherein the rotating disk rotates at a speed of 50,000 to 100,000 rpm.

29. A process for producing extremely small metal spherical particles having a crystalline composition and of high uniform size and high sphericty, comprising the following steps:

melting metal starting materials;

dispersing said molten metal starting materials into tiny spherical droplets by directing the molten metal upon a rotating disk, wherein the surrounding atmosphere has a concentration of 0.3 to 0.7 ppm oxygen ;

cooling said dispersed metal droplets by directing a cooling-reaction gas to contact the dispersed metal spherical droplets and thus solidify the

droplets into tiny spherical particles and form an anti-adhesion coating on the particles.

30. The process of claim 29 wherein the dispersing of said molten material into droplets occurs in a surrounding temperature of 10-150°C.

31. The process of claim 29 wherein the dispersing of said molten material into droplets occurs in a degree of vacuum that is –0.04Mpa.

32. The process of claim 29 wherein the dispersing of said molten material into droplets occurs in a gas atmosphere of Ar further containing 0.3 to 0.7 ppm oxygen.

33. The process of claim 29 wherein the cooling of said dispersed droplets, the cooling gas is ejected with a flow rate of 1L/min ±10%.

34. The process of claim 29 wherein the cooling-reaction gas contains Ar and 0.8-1.2 ppm oxygen.

35. The process of claim 29 wherein the cooling-reaction gas has a gas pressure of 0.5MPa ±10%.

36. The process of claim 29 wherein the temperature of said cooling-reaction gas is 10-30°C.

37. The process of claim 29 wherein the dispersing of said molten metal, the gas pressure is –0.06 to –0.02MPa.

38. The process of claim 29 wherein the dispersing of said molten metal, the external gas pressure at the periphery of the dispersed droplets is atmospheric, 14.696 psi ± 1%). .

39. A process for producing extremely small metal spherical particles having an amorphous composition and of high uniform size and high sphericty, comprising the following steps:

melting metal starting materials;

dispersing said molten metal starting materials into tiny spherical droplets by directing the molten metal upon a rotating disk, wherein the surrounding atmosphere has a temperature of 10-30°C;

cooling said dispersed metal droplets by directing a cooling-reaction gas to contact the dispersed metal spherical droplets and thus solidify the droplets into tiny spherical particles and form an anti-adhesion coating on the particles.

40. The process of claim 39 wherein the dispersing of said molten material into droplets occurs in a degree of vacuum that is –0.05Mpa.

41. The process of claim 39 wherein the dispersing of said molten material into droplets occurs in a gas atmosphere of Ar, further containing 180 to 220 ppm helium and 0.3 to 0.7 ppm oxygen.

42. The process of claim 39 wherein the cooling of said dispersed droplets, the cooling gas is ejected with a flow rate of 3L/min ±10%.

43. The process of claim 39 wherein the cooling-reaction gas contains Ar, further containing 180 to 220 ppm helium and 0.8-1.2 ppm oxygen.

44. The process of claim 39 wherein the cooling-reaction gas has a gas pressure of 0.5MPa ±10%.

45. The process of claim 39 wherein the temperature of said cooling-reaction gas is 10-30°C.

46. The process of claim 39 wherein the dispersing of said molten metal, the gas pressure is –0.06 to –0.02MPa.

47. The process of claim 39 wherein the dispersing of said molten metal, the external gas pressure at the periphery of the dispersed droplets is about atmospheric, 14.696 psi ± 1%.

48. A process for producing extremely small metal spherical particles having a porous composition and of high uniform size and high sphericty, comprising the following steps:

melting metal starting materials;

dispersing said molten metal starting materials into tiny spherical droplets by directing the molten metal upon a rotating disk, wherein the surrounding atmosphere has a concentration of 0.8 to 1.2 ppm oxygen ;

cooling said dispersed metal droplets by directing a cooling-reaction gas to contact the dispersed metal spherical droplets and thus solidify the droplets into tiny spherical particles and form an anti-adhesion coating on the particles.

49. The process of claim 48 wherein the dispersing of said molten material into droplets occurs in a surrounding temperature of 10-150°C.

50. The process of claim 48 wherein the dispersing of said molten material into droplets occurs in a degree of vacuum that is about atmospheric pressure, 14.696 psi ± 1%.

51. The process of claim 48 wherein the dispersing of said molten material into droplets occurs in a gas atmosphere of Ar further containing 0.8 to 1.2 ppm oxygen.

52. The process of claim 48 wherein the cooling of said dispersed droplets, the cooling gas is ejected with a flow rate of 1L/min ±10%.

53. The process of claim 48 wherein the cooling-reaction gas contains Ar and 0.8-1.2 ppm oxygen.

54. The process of claim 48 wherein the cooling-reaction gas has a gas pressure of 0.5MPa ±10%.

55. The process of claim 48 wherein the temperature of said cooling-reaction gas is 10-30°C.

56. The process of claim 48 wherein the dispersing of said molten metal, the gas pressure is about atmospheric, 14.696 psi ± 1%.

57. The process of claim 48 wherein the dispersing of said molten metal, the external gas pressure at the periphery of the dispersed droplets is +0.01 to +0.03MPa. .

58. Spherical particles comprising a crystalline, amorphous or porous composition, having a size of 1-300 μm±1% with a uniformity of size being ≤60-70% and a precise spherical shape of less than or equal to ±10%.

59. The spherical particles of claim 58 wherein the crystalline composition comprises a nanocomposite of the formulas, RFeB or RFeCoB or $R^1_{2-x}R^2_xFe_{bal.}Co_yM_z$, each further having the inclusion of one of more rare earth oxides, RO_w,

where R is one or more of the rare earth elements selected from the group consisting of La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu,

M is a minor metal element selected from the group consisting of Ba, Ca, Mg, Sr, Be, Bi, Cd, Co, Ga, Ge, Hf, In, B, Si, Mn, Mo, Re, Se, Ta, Nb, Te, Tl, Ti, W, Zr and V),

w=1-3

x=0-0.3,

y=0-0.3, and

z=0-0.1.

60. The spherical particles of claim 59, wherein the nanocomposite has the formula of $Nd_2Fe_{14}B$-NdO_x , where x = 1-3.

61. The spherical particles of claim 59, wherein the nanocomposite has the formula of $Nd_{2-x}Pr_xFe_{bal.}Co_yB_z$, further including NdO_w and/or Pr_w, where w=1-3, x=0-0.3, y=0-0.3 and z=0-0.1.

62. The spherical particles of claim 58 wherein the amorphous and/or porous composition comprises one or more metals selected from the

group consisting of Ag, Cu, Ni, Al, Ti, V, Nb, Cr, Mo, Mn, Fe, B, Ru, Co, Pd, Pt, Au, Zn, Cd, Ga, In, Ti, Ge, Sn, Pb, Sb, Bi, Ce, Pr and Nd.

63. The spherical particles of claim 58 wherein the amorphous and/or porous composition comprises one of more metals selected from the group consisting of Fe, Ni, Sn, Ti, Cu and Ag.

64. The spherical particles of claim 58 wherein the amorphous and/or porous composition comprises one of more metal alloys selected from the group consisting of Ni-Al, Sn-Ag-Cu, B-Fe-Nd and Al-Ni-Co-Fe.